



STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

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Scott M. Matheson, Governor
Temple A. Reynolds, Executive Director
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October 19, 1984

Mr. Bob Roggenthen
Western States Minerals Corporation
4975 Van Gordon Street
Wheatridge, Colorado 80033

Dear Mr. Roggenthen:

Re: Permit Review, TUG Joint Venture, PRO/003/007, Box Elder County, Utah

The Division has reviewed the "Replies to Notice of Intent to Mine Comments" received from Western States Minerals on September 24, 1984. The Division still has several concerns, as noted in the attached review document.

The main concern the Division has relates to final reclamation of the mine pit. The Division does not feel that Western States Minerals has adequately justified their request for a variance to reclamation of the pit. The Division's concerns and requirements for further information are discussed in detail in the review document.

It is imperative that this issue be settled as soon as possible, since many other areas such as the final reclamation plan and bonding cannot be finalized until the final disposition of the pit is known. Therefore, the permitting process cannot proceed until this issue is settled. Please contact me as soon as you have had a chance to read over the review document, so that a meeting or conference call can be set up.

Thank you for your cooperation.

Sincerely,

Susan C. Linner
Reclamation Biologist/
Permit Supervisor

jvb
Attachment
cc: D. Darby
L. Kunzler
T. Portle
R. Harden
J. Wittman
90350-23

Review of Response to Comments
TUG Joint Venture
PRO/003/007
Box Elder County, Utah

October 20, 1984

General Comments

With respect to the request for variance on reclamation of the open pit, the Division cannot approve a variance based on information presented. A 'partial' variance may be possible. However, the applicant must demonstrate that sufficient material to backfill the pit is not reasonably available as per rule M-10(12)(3).

The Division realizes that costs are the major factor of concern with regard to pit reclamation. However, reasonable and prudent efforts must be made to show what levels of reclamation can be made to make the pit a more suitable land-use area.

The Division also notes the potential future mining of low-grade ore adjacent to the pit. If these adjacent low-grade reserves are to be incorporated into the mining plan, it would be to the applicants advantage to design reclamation of the pit with the likelihood of mining these reserves either by incorporating the additional mining into the reclamation plan or providing contemporaneous reclamation in the areas to be re-disturbed in the future with a contingency for final reclamation if additional mining is evaluated as 'not feasible' in the foreseeable future.

Considerations which could be made in design criteria for pit reclamation are as follows:

1. Relocation of waste rock pile or portions thereof would make it easier and cheaper to use waste rock material as backfill in the pit.
2. Reclamation of leach pad by moving spent ore into the pit rather than on the waste dump.
3. Reduction of waste dump by moving materials into the pit will reduce the total disturbance to the site.
4. Reduction of waste dump will reduce the site and surface area of the waste pile, making a greater depth of topsoil per unit area reclaimed available.

5. If slope stability analysis proves long term stability, applicant should investigate topsoil placement and revegetation of those areas where the slopes or grades are suitable for topsoil placement and revegetation. i.e, benches, haul roads, berms, etc.
6. Applicant could evaluate several levels of reclamation for the pit area. These levels of reclamation could be submitted along with their respective costs to support the level or type of reclamation work and the final proposed land-use for the pit area. Such an evaluation would be most beneficial in review and approval of the mine plan.

RULE M-3(1)(e) - DD

All surface water flow patterns have not been addressed. The applicant needs to show how runoff will be controlled from the top soil stockpile, office facilities area as well as other disturbed areas within the security fence excluding the ponds and leach pads. The applicant might consider installing catchment basins to contain runoff and sediment load generated from these areas. The applicant should keep in mind that any containment structure should be sized to control the expected runoff of at least a 10 year-24 hour precipitation event.

As illustrated on Map 04402-1 the sediment pit will collect runoff from the rock waste dump, the area east of the rock waste dump and all undisturbed runoff directed along the diversion ditch through the culverts, an area over 735 acres. To route the runoff from that area is not acceptable to the Division. We would like to suggest that the applicant consider emplacing a ditch along the east side of the waste rock dump site to capture any runoff from the dump site and truncate the sediment pit on the east side so the volume of runoff that flows down the natural drainage would bypass the sediment pit.

RULE M-10 - JRH

Land use - Applicant has not defined or established a post mining land use for the open pit that is compatible with probable land uses.

Public Safety and Welfare - (d) & (e) - Owing to the condition in which the applicant wishes to leave the open pit, fences above the open pit are not considered adequate. Applicant shall commit to the design and construction of berms made of rock or earth which will not allow recreational off-the-road vehicles to cross over and into the pit area. Signs shall be placed on or at the berms as appropriate to post warning of hazard.

Impoundments - In as much as the open pit is an impoundment and is not self draining, applicant shall design or provide a means for the pit to be self-draining and non-impounding. Such a design could be the placement of coarse, free-drawing materials (french drain) which would be sufficient to absorb runoff into the pit and prevent ponding or free-standing water. Other alternatives such as wildlife ponds may also be proposed.

Slopes - Post reclamation contours of the waste rock dump are not configured in a manner conducive to revegetation or erosion or visual standards as expressed in this section. Slopes should be rounded so as to blend in more with natural surroundings. 1:1 slopes on the face of the dump should be reduced to allow for stabilization of topsoil over the waste pile and for more conducive slopes for revegetations. The Division recommends that the 60 foot high embankment be reduced to 2:1 slopes on the face and sides of the dump and that the pile be rounded so as to blend visually with the surrounding terrain. 2:1 slopes will allow for conventional drill-seeding equipment on the embankment efforts.

Highwalls - Applicant has not demonstrated or proven the stability of the benches left in the open pit. Applicant must demonstrate and prove the long-term stability of the following:

1. Typical benches and rock faces left in the pit for all rock types at their weakest orientation in the pit.
2. Rock slope stability for pit walls at various aspects in the pit.

Seismic coefficient for design shall be based on Zone 3 conditions, i.e, a seismic coefficient of 0.15 (REF. EM 1110-2-19 02, Army Corps of Engineers, April, 1970). It is also the opinion of the Division that sufficient backfill material (from the waste rock dump or the leach pad) is available to reduce and stabilize slopes and achieve slopes inside the pit at less than 45°.

Roads & Pads - Reclamation of the haul road into the pit should be addressed.

Drainages - Drainages have been intercepted by the excavation of the pit. It appears that these drainages may be able to be diverted permanently and in conjunction with the construction of safety berms (M-10(2)). Applicant should investigate such diversion for post-mining conditions.

RULE M-10(14) - TLP

1. The information provided in this response is still inadequate to justify not removing soils from slopes of the proposed open pit where exploration roads revealed the profile. It is the opinion of the Division that the area in the vicinity of the existing roads is not too steep nor are soils too shallow. The soils found on these slopes should not be sacrificed. Please reconcile and coordinate response to the overall soils balance (Table S-1). In areas where disturbance will occur and where slopes are such that the safety of equipment operators will be compromised an exception will be allowed. If this is the case in a specific area(s) these area(s) need to be clearly depicted on a map.
2. The purpose of baseline data on organic matter, nitrogen, phosphorus and potassium is to have a knowledge of what the native "target condition" is. Making fertilizer recommendations according to agricultural guidelines is of limited value. Thus, by comparing values obtained after mining with the pre-mining values the natural condition can best be emulated. Please provide this data for each soil series. Another consideration is the nitrogen depletion associated with straw application. This will need to be accounted for. The "rule of thumb" is generally 20 pounds of additional N for each ton of straw applied.
3. The map provided does depict removal depths by location. There is no obvious relationship of these removal depths to the soils reports or the "Technical Memorandum" which states that suitable soils "vary from 14 to 36 inches with an average depth of 18 inches". If for the sake of a benchmark the 18 inch figure cited by the operator is used the volume of soil generated using the acreage figure given in table S-1 would be 288,948 cubic yards versus the 182,300 yards projected in Table S-1.

The applicant has not used existing data to generate topsoil stripping maps and soil depth and volume tables. The information in the text conflicts with table S-1 and the topsoil stripping map. These should be redone to accurately reflect the situation. Further, the situation is complicated by the lack of resolution of the open pit issue which must be known in order to have accurate acreages for soil redistribution. This must be reconciled prior to permit approval.

4. The soil storage plan is open to question. The proximity of soil stockpiles to roads and leach pads raises questions as to potential for undue contamination.

The depth of the stockpile at the leach pad location should be provided considering any extra volume obtained by revising the volume estimates based on existing soils information.

Please provide documentation from the Department of Health approving the detoxification methods for the heap leaching pads.

What is the potential for residual hexacyanoferrates being left in existence on the site following detoxification operations?

What is the maximum quantity of spent materials to be on the site at any given time during "ongoing operational procedures"? What will be the fate of such materials during any temporary cessation of mining activities.

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